```
SCAN_TEST =

    pattern = 0;
    apply "grp1_load" 0 =
        chain "chain_0" =
"11111101011100001111100011100110110101000001010010\
10001100000111000110100001101001110010001010011110\
11011100011000010001100011110010001001010100000011\
10101010010011001011011001011001100100000110010010\
01110100000000111101111011001100111010111011010010\
00100111111001010110100001001100000011000011101101\
10101111011011010001101100111001000110100011011100\
10101111100100000001110110010000110011000011111000\
00010010001010110011101110001111111111100111100111\
01011000111001111101000110001111011101110011100111\
00100011010101100101010111000101010101111010011000\
00110111111011101110111100111010001001000010000011111\
11101100010011101101111001110111111101101110011001l\
11110111000110000101111100001000011100111111101111\
01010000100000010001101010101111110100111011011010O\
01111011111011111111101001101011001110001100010100\
11011110111100100001000010111111111110000010110011\
10010011001110011111015100000011010010100110001l010\
11100000101011010110101001011011111111010011110001\
00011010011111101100010100110111010101101010010O110\
10111110101011100010000100111000011000011000010111\
01101101100000011001101001100001101100000101111O110\
11010011011110000110001001110001110110101001000110\
11000001101111111111011110111010010001101010000011\
10110110010001011000011000100111101010111111011001\
11110001010001000110001110011101011100001000100000\
10110110111010010011001001110110010010100010110111\
10011100101100110110010011000001010110101011110100\
01010000101101101100100101011000010011011100010110\
00111111000101011111000000010010100001101100001100\
                    0001110111001000011100100000101100011100000l".
```

FIG. 1a

```
chain "chain_1" =
"1011110010101010001111110011100011011001101100111\
0111001110100110011111011000011101010101011111010\
0011101000100011011010101101010101001001000901001\
0100101010000110100110010011011000001001100000101\
0101001110000000001010101101100001111110100010100\
0101100010101111100111011001001100111101000110110\
0011111110000001110110000000111001111101100110011\
1101110000000000100010101110000111111000110100011\
1101100100000000110001110100010111011100110101111\
0001000101011011001001111111101100100000111111100\
1110010001110111001101100101101100011011101100110\
0011000110001011011110100101110101110000101101001\
0001101101010011110100100101101010011101100011010\
0101000000110011010000001111110010010100000110001\
0000011101011101100001010001110001100111010001010\
0100001000000000011011110001001001100101000000111\
0101000111010100000100010000001100001100000101010\
1010001101110111100000011000001101100100111011111\
0100100010111010001011101101111010000011101000001\
1000110111110010000111010111011010110100001110111\
1011000010100011010011110110010010001111010001111\
0010101111100000011110111011110101000110100010001\
0001001100111011010000110111000001010011101111101\
1100000110010111011010110101001111010110100000111\
0100111101100011111111000010011100011001100010110\
1010111010110101010000001010001011111110111011011\
1000111001001010010000011010011011000110010111101\
0100001000000011111010001111011000100100000001010\
1111111010011000101101111101010000010100011100000\
1100101000110110010010110110110001101111111001101\
0111110001111111000001001100011011101100000";
```

FIG. 1b

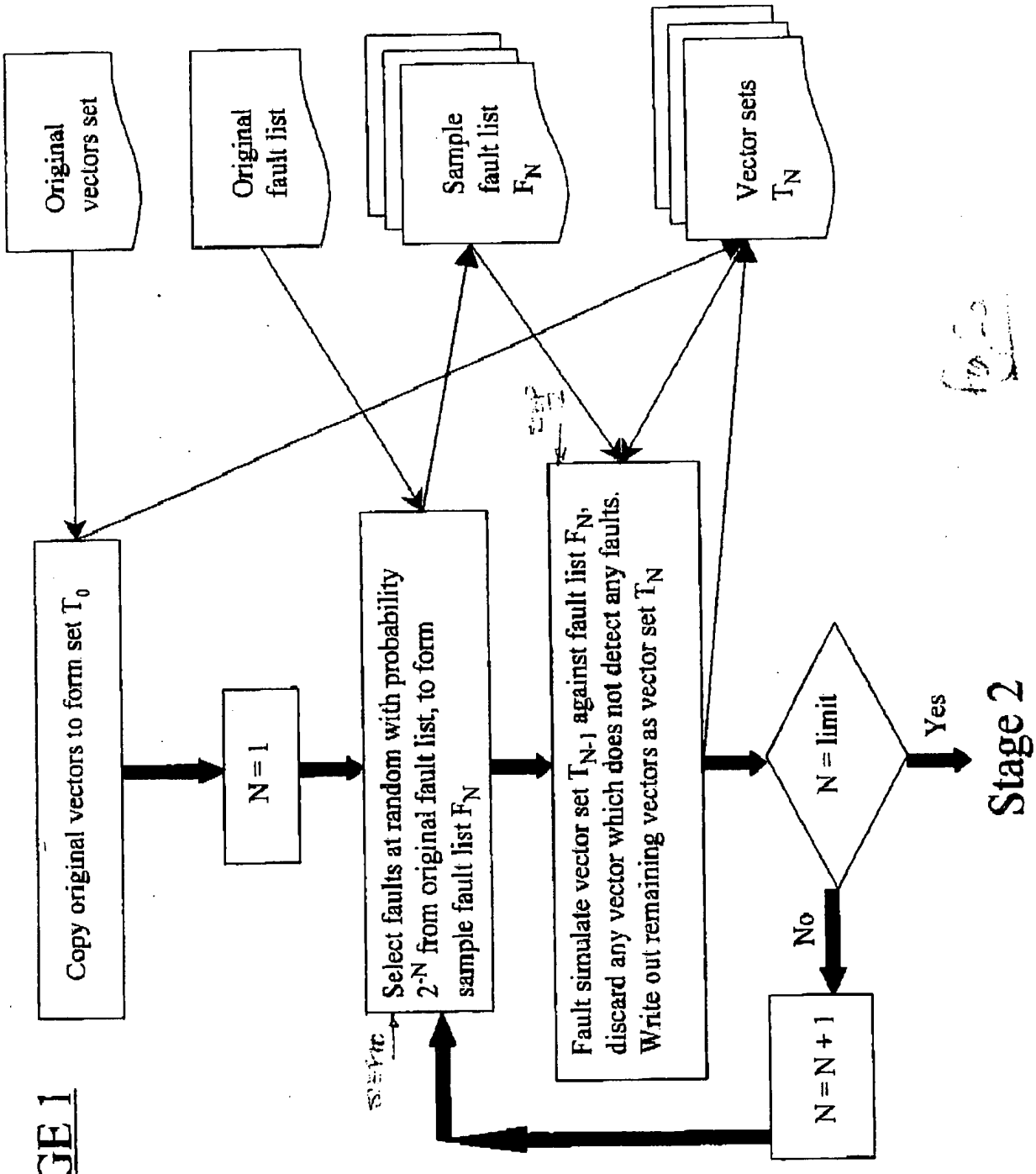

STAGE 1
Original vectors set
Original fault list
Sample fault list F_N
Vector sets T_N
Copy original vectors to form set T_0
N = 1
Select faults at random with probability 2^{-N} from original fault list, to form sample fault list F_N
Fault simulate vector set T_{N-1} against fault list F_N, discard any vector which does not detect any faults. Write out remaining vectors as vector set T_N
N = limit
Yes
No
N = N + 1
Stage 2

Fig 2

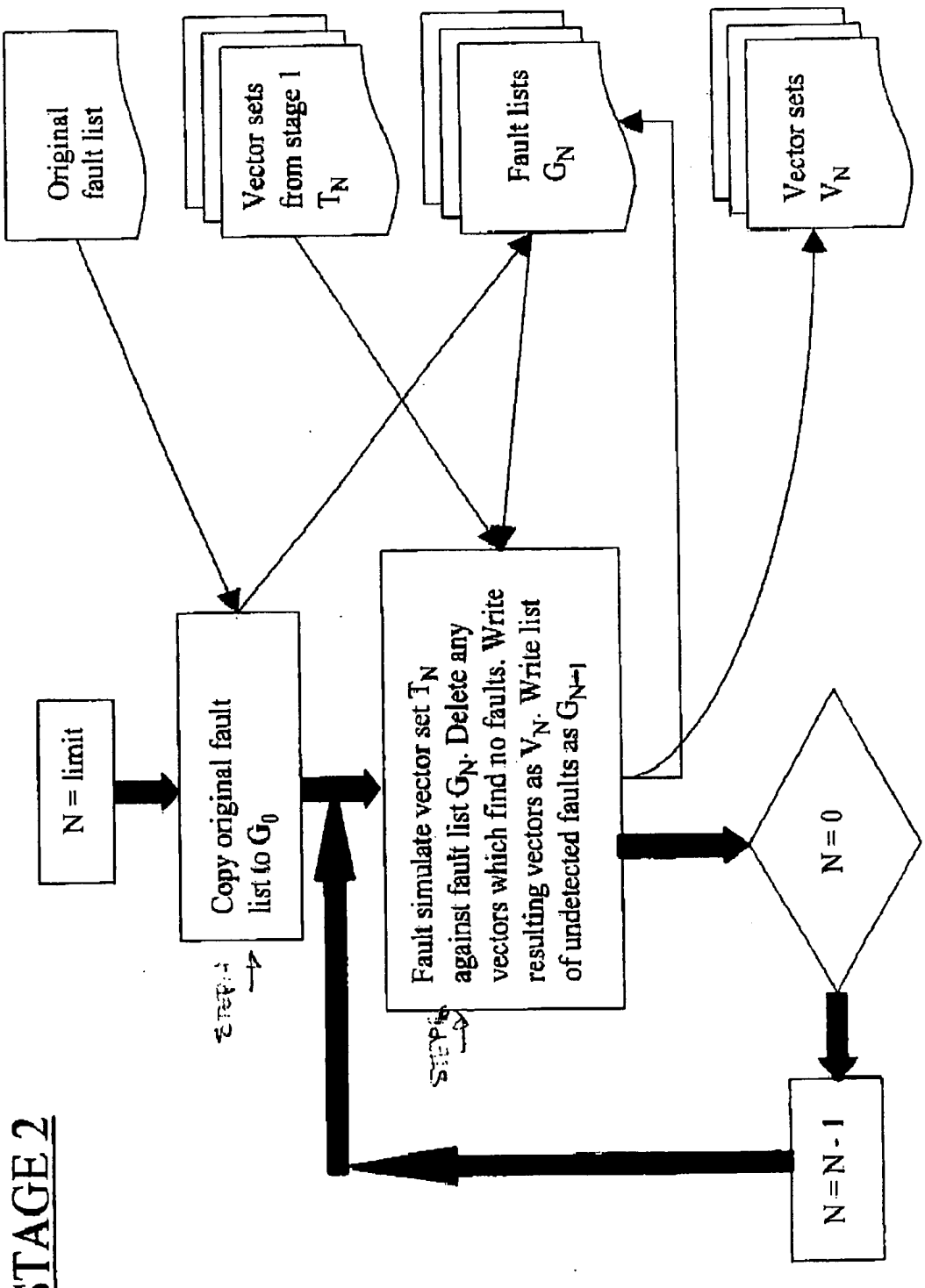

STAGE 2
N = limit
Copy original fault list to G_0
Original fault list
Vector sets from stage 1 T_N
Fault lists G_N
Vector sets V_N
Fault simulate vector set T_N against fault list G_N. Delete any vectors which find no faults. Write resulting vectors as V_N. Write list of undetected faults as G_{N-1}
N = 0
N = N - 1

Fig 2b

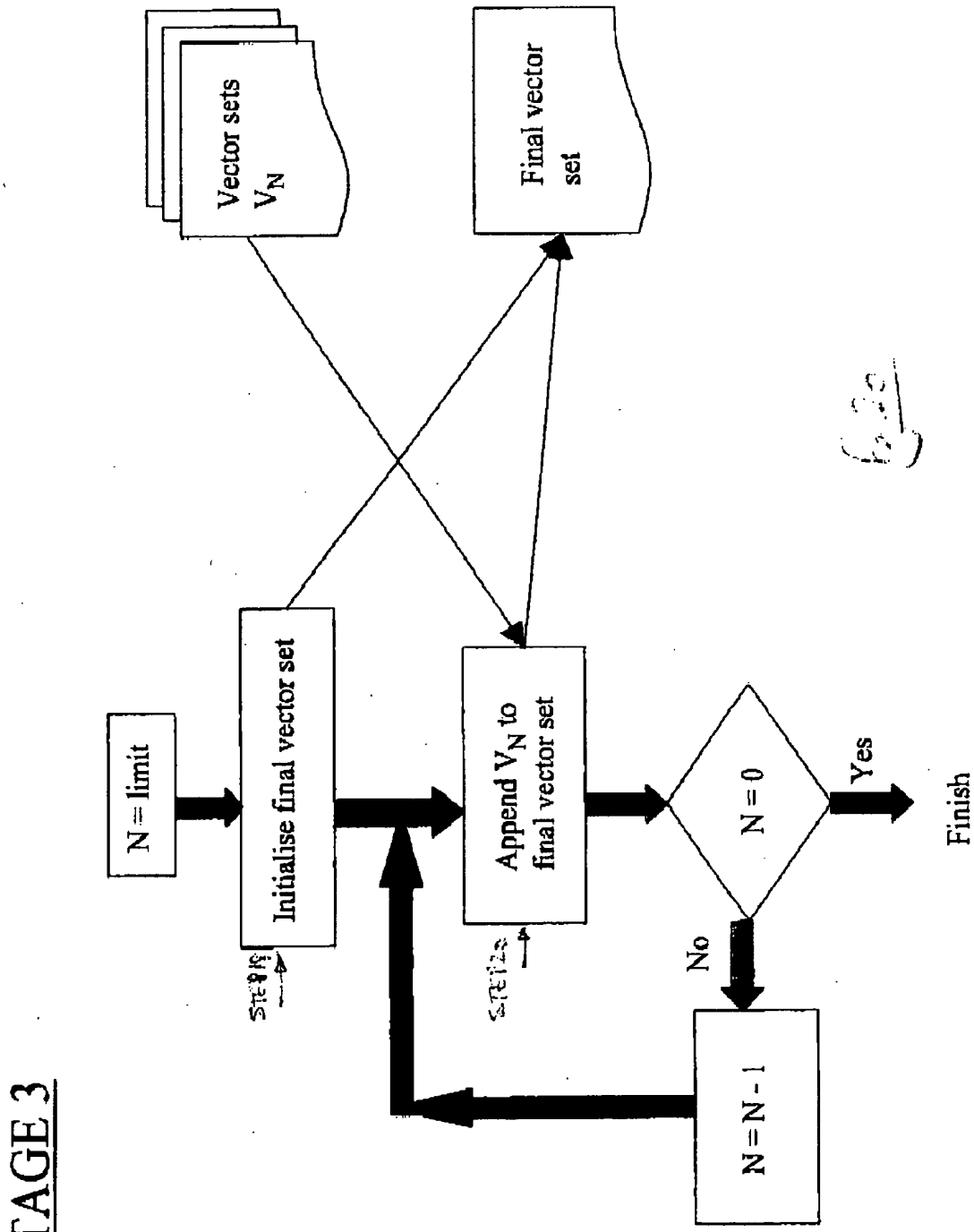
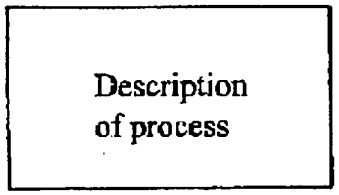

STAGE 3
Vector sets V_N
Final vector set
N = limit
Initialise final vector set
Append V_N to final vector set
N = 0
Yes
Finish
No
N = N - 1

Fig 2

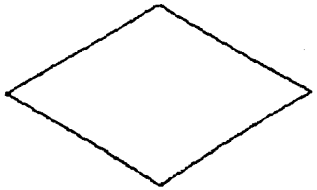
Key to flow diagrams

Data used as input to a process

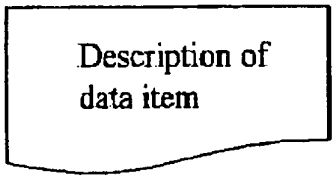
Data output from a process



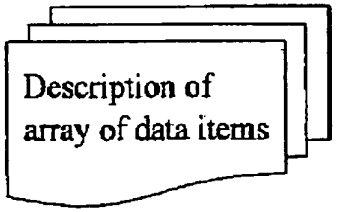
Process



Decision



Data item



Array of data items

Process flow

Fig3

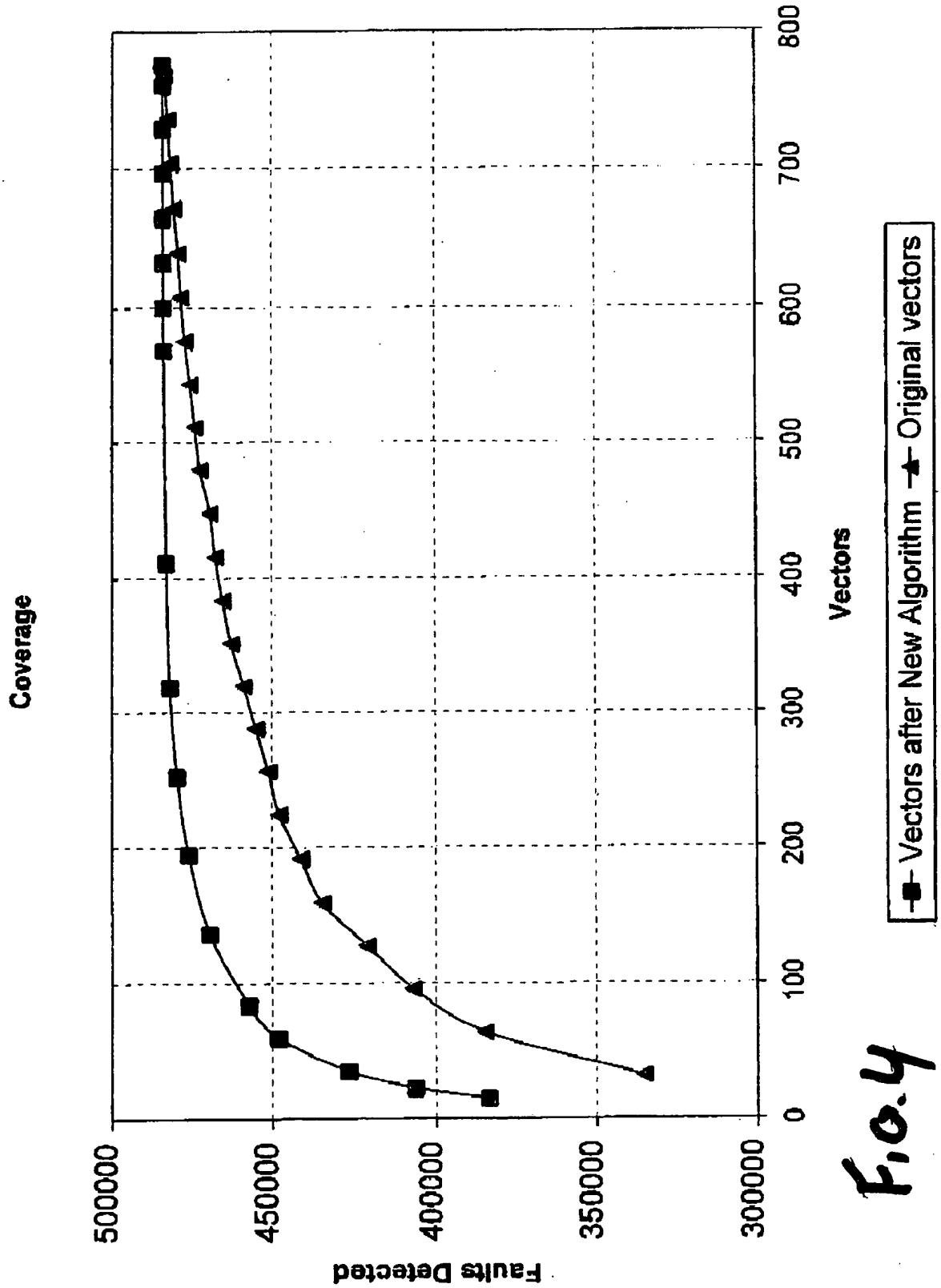

Coverage
Faults Detected
500000
450000
400000
350000
300000
0
100
200
300
400
500
600
700
800
Vectors
Vectors after New Algorithm
Original vectors

Fig. 4